

Appl. S.N. 10/674,495
Amdt. Dated Nov. 20, 2006
Reply to Office Action of August 22, 2006

133545-1

The listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1-10 (canceled)

[c11] (currently amended) A magnetizing assembly comprising a plurality of magnetizing coil units, each of the magnetizing coil units comprising a coiled copper sheet located in a housing, the housing containing a coolant input port in a bottom of the housing, a plurality of microchannels in the coolant input port, a coolant output port located in a top of the housing, and a plurality of microchannels in the coolant output port, wherein the plurality of magnetizing coil units are stacked upon each other; and,

either a top portion or a bottom portion of each housing includes an opening or a protrusion, wherein the opening comprises a groove and the protrusion comprises a tongue; and
the protrusion on the housing of one magnetizing coil unit is adapted to fit into the opening on the housing of an adjacent magnetizing coil unit in the assembly.

[c12] (original) The magnetizing assembly of claim 11, further comprising a coolant reservoir in an outer portion of the magnetizing coil units.

Claims 13-16 (canceled)

[c17] (withdrawn) A method of manufacturing a magnetizing coil comprising winding a copper sheet into a coil to form a solenoid coil, the width of the copper sheet being equal to the height of the solenoid coil.

[c18] (withdrawn) The method of claim 17, further comprising inserting an insulation layer between windings of the copper coil.

[c19] (withdrawn) The method of claim 18, wherein inserting the insulation layer comprises coating the copper sheet with an insulation layer before winding the copper sheet.

[c20] (withdrawn) The method of claim 18, wherein inserting the insulating layer comprises co-winding an insulation layer with the copper sheet.

[c21] (withdrawn) The method of claim 20, wherein the insulation layer is a solid or porous sheet.

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[c22] (withdrawn) The method of claim 19, wherein the insulation layer is spiral wrapped around the copper sheet.

[c23] (withdrawn) The method of claim 19, further comprising locating the solenoid coil in a housing, the housing containing a coolant input port in a bottom of the housing, a plurality of microchannels in the coolant input port, a coolant output port located in a top of the housing, and a plurality of microchannels in the coolant output port.

[c24] (withdrawn) The method of claim 23, further comprising supplying a coolant to the cavity of the housing through the coolant input port.

[c25] (withdrawn) A method of making a permanent magnet comprising:
surrounding an unmagnetized or partially magnetized precursor body with a least one magnetizing coil unit, the magnetizing coil unit comprising a coiled metal sheet solenoid; and
providing a pulsed magnetic field to the precursor body to form a permanent magnet body.

[c26] (withdrawn) The method of claim 25, wherein the magnetizing coil unit is located in a housing comprising a coolant input port in a bottom of the housing, a plurality of microchannels in the coolant input port, a coolant output port located in a top of the housing, and a plurality of microchannels in the coolant output port.

[c27] (withdrawn) The method of claim 26, further comprising supplying coolant to the magnetizing coil unit via the coolant input port during the pulsed magnetic field.

[c28] (withdrawn) The method of claim 27, wherein the coolant is liquid nitrogen.

[c29] (withdrawn) The method of claim 28, wherein the liquid nitrogen evaporates during the pulse and exits the housing as a gas.

[c30] (withdrawn) The method of claim 26, further comprising using a plurality of magnetizing coil units to surround a plurality of unmagnetized or partially magnetized precursor bodies and to simultaneously magnetize the plurality of precursor bodies.

[c31] (withdrawn) The method of claim 30, wherein the plurality of precursor bodies are attached to a yoke of an MRI system, and the plurality of housings are stacked on top of each other.

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[c32] (withdrawn) The method of claim 29, wherein the liquid nitrogen permeates in a space between the copper sheet windings.

[c33] (withdrawn) The method of claim 29, wherein the liquid nitrogen permeates through a porous insulation layer located between the copper sheet windings.

[c34] (withdrawn) The method of claim 31, wherein the permanent magnet body comprises a RMB alloy, where R comprises at least one rare earth element and M comprises iron.